IFI/2015/1-4265

Sampling Fish for the Water Framework Directive

Lakes 2014

Corglass Lough

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INLAND FISHERIES IRELAND

Water Framework Directive Fish Stock Survey of Corglass Lough, June 2014

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CITATION: Kelly, F.L., Connor, L., Morrissey, E., Coyne, J., Feeney, R., Matson, R. and Rocks, K. (2015i) Water Framework Directive Fish Stock Survey of Corglass Lough, June 2014. Inland Fisheries Ireland, 3044 Lake Drive, Citywest Business Campus, Dublin 24.

Cover photo: Netting survey on Lough Brin © Inland Fisheries Ireland

ACKNOWLEDGEMENTS

The authors wish to gratefully acknowledge the help and co-operation of the regional director Dr. Milton Matthews and the staff from IFI, Ballyshannon. The authors would also like to gratefully acknowledge the help and cooperation of all their colleagues in IFI, Swords.

The authors would also like to acknowledge the funding provided for the project from the Department of Communications, Energy and Natural Resources for 2014.

1.1 Introduction

Corglass Lough is situated in the Erne catchment, north of Killeshandra, Co. Cavan (Plate 1.1, Fig. 1.1). The lake has a surface area of 34ha and is relatively shallow, with a mean depth of 1.6m and a maximum depth of 6m. The lake is categorised as typology class 9 (as designated by the EPA for the Water Framework Directive), i.e. shallow (mean depth <4m), less than 50ha and high alkalinity (>100mg/l $CaCO_3$). Corglass Lough is located within the Lough Oughter and its associated loughs Special Area of Conservation (NPWS, 2002). The geology of the area is predominantly Lower Carboniferous Limestone.

The lake is a popular coarse fishery and has historically held a good stock of coarse fish species, including rudd, roach, perch, bream, pike, tench, roach x bream hybrids and roach x rudd hybrids (M. Fitzpatrick, *pers. comm.*). The lake has also been long-lined for eels in the past by commercial eel fishermen. Zebra mussels are present in the lake and are thought to have colonised post 2003 (M. Fitzpatrick, *pers. comm.*).

Corglass lake was previously surveyed in July 2005 by Inland Fisheries Ireland (formerly the Central and Northern Regional Fisheries Boards) for the NS Share "Fish in Lakes Project", with six species (plus two hybrids) being captured – perch, pike, roach, bream, tench, eels, roach x bream hybrids and roach x rudd hybrids (Kelly *et al.*, 2007). Corglass Lough was also surveyed in 2008 and 2011 as part of the Water Framework Directive surveillance monitoring programme (Kelly *et al.*, 2009 and Kelly *et al.*, 2012a). During the 2011 survey, perch and roach were found to be the dominant species present in the lake. Pike, rudd, roach x bream hybrids and eels were also captured during the survey.

This report summarises the results of the 2014 fish stock survey carried out on the lake, as part of the Water Framework Directive surveillance monitoring programme.

Plate 1.1. Corglass Lough

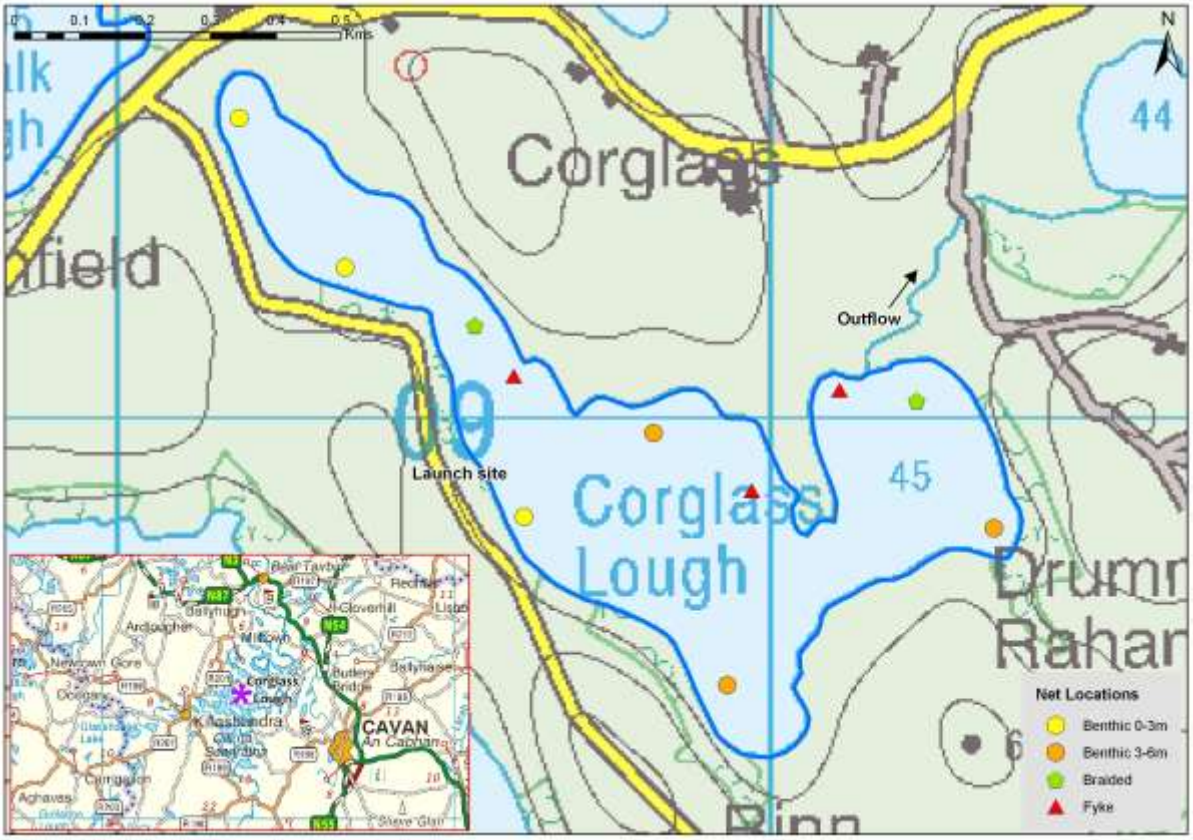

Fig. 1.1. Location map of Corglass Lough showing locations and depths of each net (outflow is indicated on map)

1.2 Methods

Corglass Lough was surveyed over two nights from the 25th to the 27th of June 2014. A total of three sets of Dutch fyke nets and six benthic monofilament multi-mesh (12 panel, 5-55mm mesh size) CEN standard survey gill nets (3 @ 0-2.9m and 3 @ 3-5.9m) were deployed in the lake (nine sites). The netting effort was supplemented using two benthic braided survey gill nets (62.5mm mesh knot to knot) at two additional sites. Nets were deployed in the same locations as were randomly selected in the previous surveys in 2008 and 2011. A handheld GPS was used to mark the precise location of each net. The angle of each gill net in relation to the shoreline was randomised.

All fish apart from perch were measured and weighed on site and scales were removed from all roach, pike, tench and roach x bream hybrids. Live fish were returned to the water whenever possible (i.e. when the likelihood of their survival was considered to be good). Samples of fish were retained for further analysis.

1.3 Results

1.3.1 Species Richness

A total of five fish species one type of hybrid were recorded in Corglass Lough in June 2014, with 486 fish being captured. The number of each species captured by each gear type is shown in Table 1.1. Perch was the most abundant fish species recorded, followed by roach, roach x bream hybrids, pike, tench and eels. During the previous surveys in 2008 and 2011 the same species composition was recorded with the exception of rudd, which were only captured during the 2011 survey and bream that were only recorded in the 2008 survey. Tench were not captured during the 2008 survey but were recorded in 2011 and 2014.

Table 1.1. Number of each fish species captured by each gear type during the survey on Corglass Lough, June 2014

Scientific name	Common name	Number of fish captured			
		Benthic mono multimesh gill nets	Benthic braided gill nets	Fyke nets	Total
Perca fluviatilis	Perch	350	0	1	351
Rutilus rutilus	Roach	104	0	0	104
Rutilus rutilus x Abramis brama	Roach x bream hybrid	11	11	0	22
Esox lucius	Pike	1	2	2	5
Tinca tinca	Tench	2	0	0	2
Anguilla anguilla	European eel	0	0	2	2

1.3.2 Fish abundance

Fish abundance (mean CPUE) and biomass (mean BPUE) were calculated as the mean number/weight of fish caught per metre of net. For all fish species except eel, CPUE/BPUE is based on all nets, whereas eel CPUE/BPUE is based on fyke nets only. Mean CPUE and BPUE for all fish species captured in the 2008, 2011 and 2014 surveys are summarised in Table 1.2. Mean CPUE and BPUE for all species is illustrated in Figure 1.2 and 1.3.

Perch was the dominant species in terms of abundance (CPUE) and roach was the dominant species in terms of biomass (BPUE). Although the mean perch CPUE and BPUE fluctuated slightly over the three sampling years, these differences were not statistically significant (Table 1.2; Fig 1.2 and 1.3). The mean roach CPUE and BPUE increased from 2008 to 2011 and decreased again in 2014, however, these differences were also not statistically significant (Table 1.2; Fig 1.2 and 1.3).

Table 1.2. Mean (S.E.) CPUE and BPUE for all fish species captured on Corglass Lough, 2008, 2011 and 2014

Scientific name	Common name	2008	2011	2014
			Mean CPUE	
Perca fluviatilis	Perch	0.896 (0.307)	0.75 (0.346)	1.062 (0.517)
Esox lucius	Pike	0.009 (0.004)	0.019 (0.007)	0.012 (0.007)
Rutilus rutilus	Roach	0.460 (0.157)	0.687 (0.211)	0.315 (0.101)
Scardinius erythrophthalmus	Rudd	-	0.003 (0.003)	-
Tinca tinca	Tench	-	0.012 (0.009)	0.006 (0.006)
Rutilus rutilus x Abramis brama	Roach x bream hybrid	0.093 (0.047)	0.075 (0.037)	0.070 (0.029)
Abramis brama	Bream	0.003 (0.003)	-	-
Anguilla anguilla	European eel	0.05 (0.028)	0.022 (0.005)	0.011 (0.005)
			Mean BPUE	
Perca fluviatilis	Perch	16.454 (6.352)	17.684 (9.085)	11.889 (5.387)
Esox lucius	Pike	17.673 (11.286)	31.962 (18.971)	21.142 (17.332)
Rutilus rutilus	Roach	28.491 (9.320)	64.896 (18.748)	32.373 (12.914)
Scardinius erythrophthalmus	Rudd	-	1.409 (1.409)	-
Tinca tinca	Tench	-	20.206 (13.921)	7.583 (7.583)
Rutilus rutilus x Abramis brama	Roach x bream hybrid	6.927 (3.433)	30.189 (12.617)	45.824 (19.791)
Abramis brama	Bream	8.484 (8.484)	-	-
Anguilla anguilla	European eel	11.344 (5.688)	8.2388 (1.451)	2.655 (1.645)

Note: On the rare occasion where biomass data was unavailable for an individual fish, this was determined from a length/weight regression for that species.

*Eel CPUE and BPUE based on fyke nets only

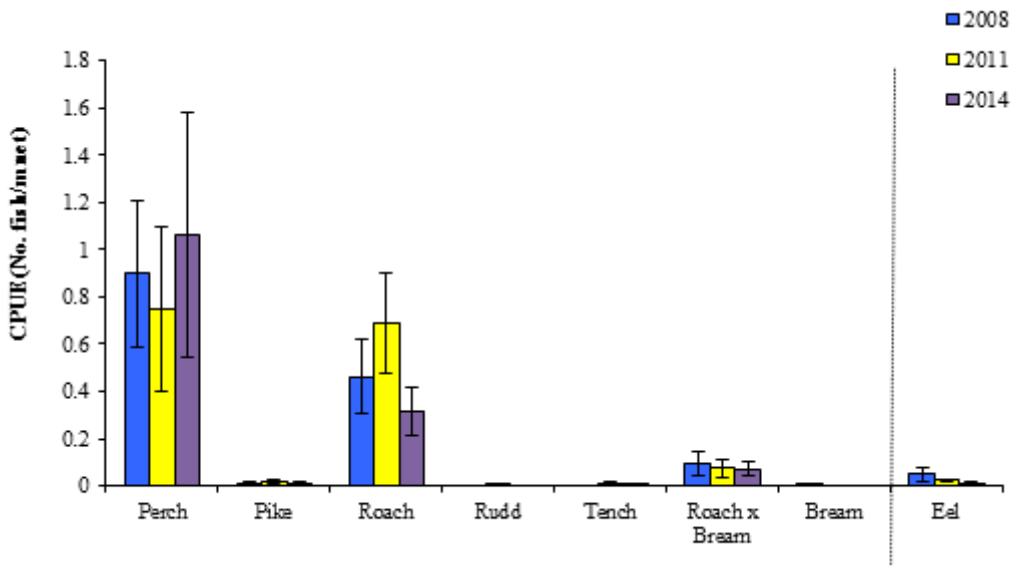

Fig. 1.2. Mean (±S.E.) CPUE for all fish species captured in Corglass Lough (Eel CPUE based on fyke nets only), 2008, 2011 and 2014

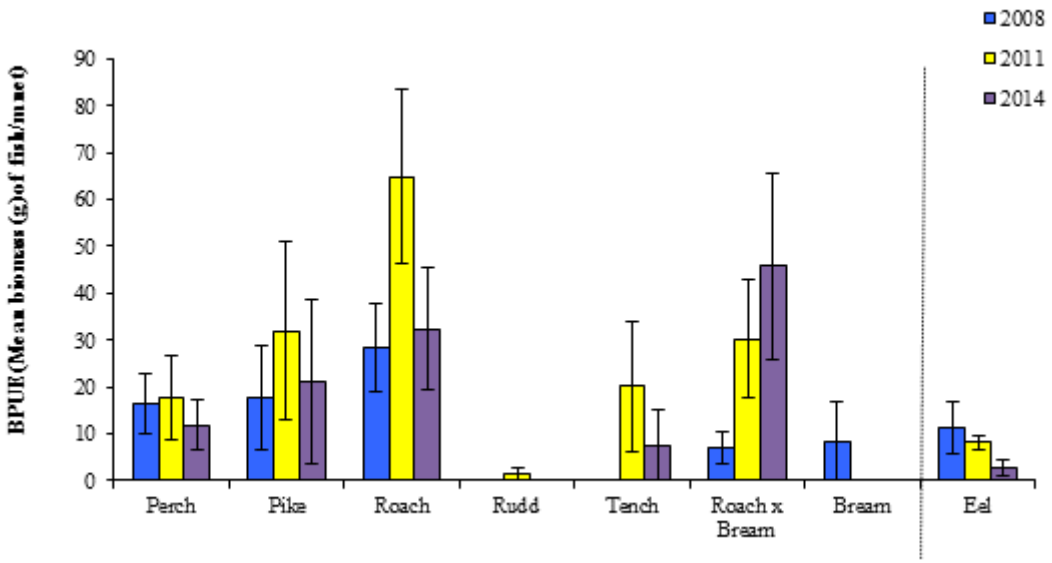

Fig. 1.3. Mean (±S.E.) BPUE for all fish species captured in Corglass Lough (Eel BPUE based on fyke nets only), 2008, 2011 and 2014

1.3.3 Length frequency distributions and growth

Perch captured during the 2014 survey ranged in length from 3.1cm to 27.0cm (mean = 6.7cm) (Fig. 1.4) with seven age classes present, ranging from 0+ to 6+, with a mean L1 of 6.1cm (Table 1.3). The dominant age class was 1+ (Fig. 1.4). Perch captured during the 2008 and 2011 surveys had a similar length range and age range to the 2014 survey, however, dominant age class was smaller in 2014 than 2008 and 2011 (Fig. 1.4).

Roach captured during the 2014 survey ranged in length from 7.0cm to 30.1cm (mean = 15.4cm) (Fig.1.5) with eight age classes present, ranging from 2+ to 9+, with a mean L1 of 2.2cm (Table 1.4). The dominant age class was 2+ (Fig. 1.5). Roach captured during the 2008 and 2011 surveys had a similar length range, age range and growth rate to the 2014 survey (Fig.1.5).

Pike captured during the 2014 survey ranged in length from 26.0cm to 73.7cm and eels ranged from 42.0cm to 60.2cm. Roach x bream hybrids ranged in length from 10.2cm to 38.5cm and two tench measuring 39.5cm and 44.0cm were also recorded.

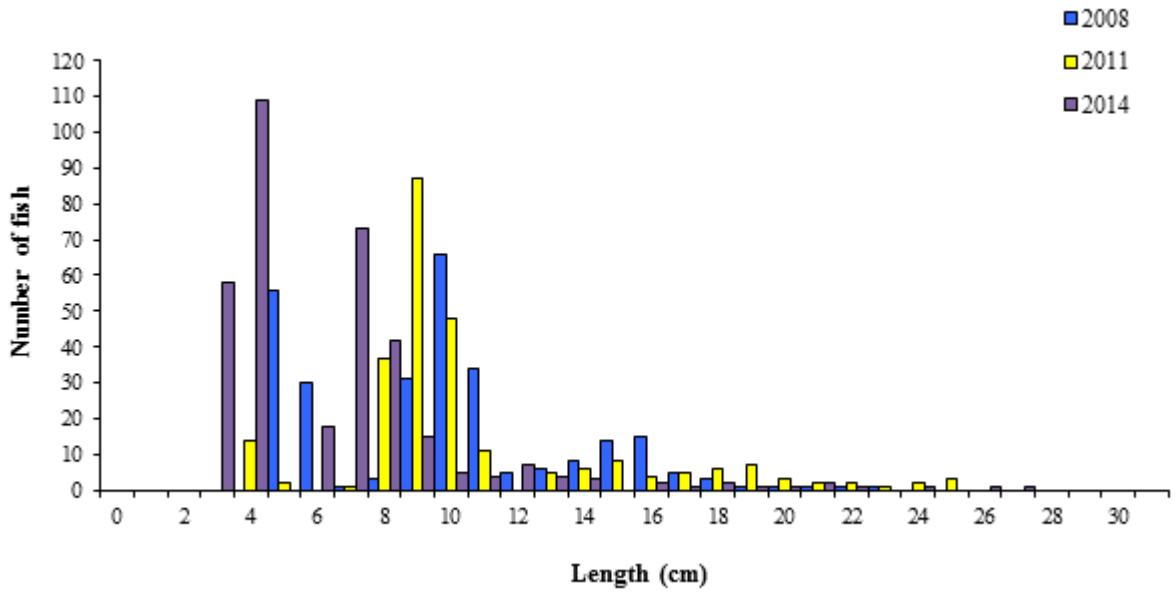

Fig. 1.4. Length frequency of perch captured on Corglass Lough, 2008, 2011 and 2014

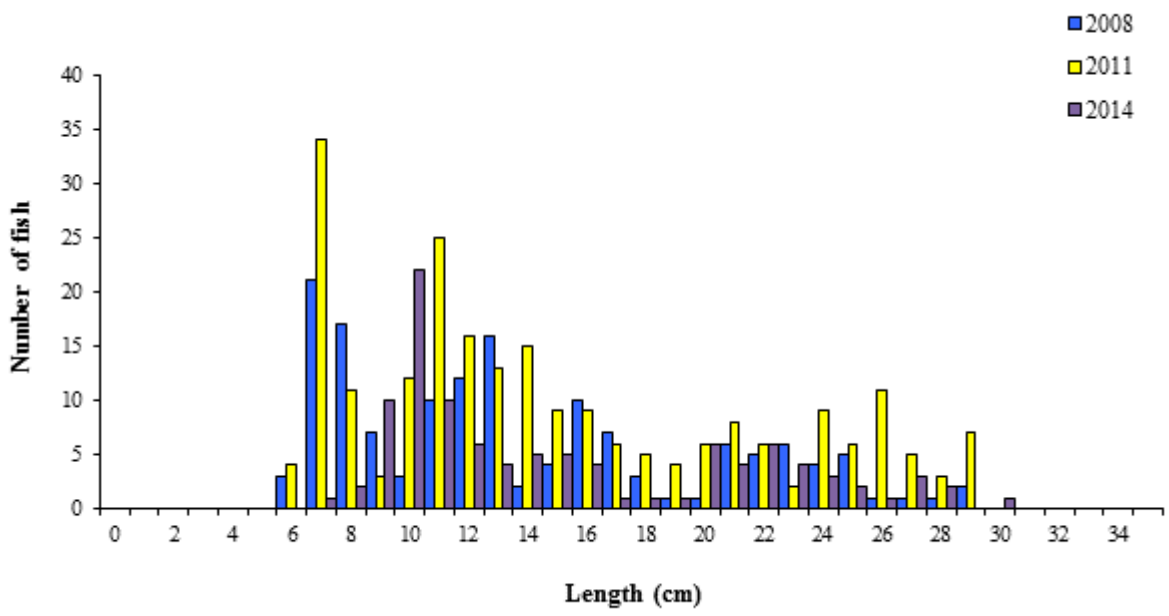

Fig. 1.5. Length frequency of roach captured on Corglass Lough, 2008, 2011 and 2014

Table 1.3. Mean (±SE) perch length (cm) at age for Corglass Lough, June 2014

	L_1	L_2	L_3	L_4	L_5	
Mean	6.1 (0.1)	10.2 (0.2)	14.8 (0.4)	18.5 (0.5)	22.1 (0.6)	24.9
N	40	25	12	10	4	1
Range	4.9-8.9	7.9-13.4	12.9-17.5	15.6-20.7	21.1-23.8	24-8.24.8

Table 1.4. Mean (±SE) roach length (cm) at age for Corglass Lough, June 2014

	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	L_9
Mean	2.2 (0.1)	5.7 (0.2)	10.2 (0.3)	14.1 (0.3)	17.9 (0.4)	21.1 (0.5)	23.8 (0.6)	25.9 (1.0)	27.4
N	46	46	37	28	25	17	11	5	1
Range	1.4-3.0	3.3-9.0	7.5-14.1	9.9-16.9	14.1-21.3	17.2-23.6	20.6-26.0	22.7-28.5	27.3-27.3

1.4 Summary

Perch was the dominant species in terms of abundance (CPUE) and roach x bream hybrids was the dominant species in terms of biomass (BPUE) captured in the survey gill nets during the 2014 survey.

Although the mean perch CPUE and BPUE fluctuated slightly over the three sampling years, these differences were not statistically significant. Perch ranged in age from 0+ to 6+, indicating reproductive success in each of the previous seven years. The dominant age class was 1+.

The mean roach CPUE and BPUE increased from 2008 to 2011 and decreased again in 2014, however, these differences were also not statistically significant. Roach ranged in age from 2+ to 9+,

indicating reproductive success in eight of the previous ten years, with no 0+ or 1+ age classes recorded. The dominant age class was 2+.

Classification and assigning lakes with an ecological status is a critical part of the WFD monitoring programme. It allows River Basin District managers to identify and prioritise lakes that currently fall short of the minimum "Good Ecological Status" that is required by 2015 if Ireland is not to incur penalties.

A multimetric fish ecological classification tool (Fish in Lakes – 'FIL') was developed for the island of Ireland (Ecoregion 17) using IFI and Agri-Food and Biosciences Institute Northern Ireland (AFBINI) data generated during the NSSHARE Fish in Lakes project (Kelly *et al.*, 2008). This tool was further developed during 2010 (FIL2) in order to make it fully WFD compliant, including producing EQR values for each lake and associated confidence in classification (Kelly *et al*., 2012b). Using the FIL2 classification tool, Corglass Lough has been assigned an ecological status of Poor in 2005, Moderate in 2008 and Bad for both 2011 and 2014 based on the fish populations present.

In the 2010 to 2012 surveillance monitoring reporting period, the EPA assigned Corglass Lough an overall draft ecological status of Bad, based on all monitored physico-chemical and biological elements, including fish.

1.5 References

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